



**SOUTH AUSTRALIAN SOCIETY OF MODEL
AND EXPERIMENTAL ENGINEERS INC**

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On the cover of this Bulletin, you can feel the tension of intense concentration as John Foster prepares his Putt-Putt for the Challenge. John’s boat won the Concours d’Elegance. More on the Challenge in this Bulletin.

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EDITORIAL

Communication

There are many activities at SASMEE. Model boats, trains – steam, electric and internal combustion, Garden Railway and, of course, the Steam House. What we don't have are traction engines, or steam road vehicles in general. The main reason for this is the lack of room.

There have been many proposals with one, in particular, having some merit. It would involve not running the 7 ¼ "track for the duration of the traction motor run. The proposed route would be along the road/track between the 7 ¼ "station and the Canteen. With turn arounds at each end.

Passenger loading would be undertaken at the Station end. It would require at least three traction engines on the day to make it viable and would take some planning and agreement from all players regarding the scheduling, but could be done. The road would need a bit of work to smooth it out.

As well as public run days, members with traction engines can organise a run when there are no trains operating, similar to the Boaties Putt-Putt challenge.

Thanks to all to contributors to the Bulletin. It is now so large, it has a Contents Table. Hopefully easier to find your way around.

Drawings of South Australian locomotives

The library has quite a number of drawings of locomotives. However, very few are of SAR locomotives – or rollingstock for that matter. A member asked recently for drawings of an Rx. If you have a copy of this locomotive, or any other SAR locomotive, could you please let me know at sasmee.librarian@outlook.com ? This year, being the centenary of the arrival of W A Webb to the SAR makes it appropriate we become a bit parochial.

President's report May 2022

Club events

Invitation Run

Because of high temperatures in January, the traditional inter - club evening had to be cancelled. However, the Committee decided that an alternative time should be advertised for the lost 2022 event. Thus, in March, on what turned out to be a lovely Saturday afternoon and evening, it happened. There were boats, many locomotives, and of course food. The canteen people, as usual, put on another great effort to supply afternoon teas, and a main evening meal. While at least one other club had an event on at the same time, visitors were well represented, including, I think, for the first time from Port Augusta.

Putt-Putt Regatta

On a busy weekend, also in March, the experimental boat members arranged a challenge race program for the Formula One of Putt-Putt boats. This was combined with a general call for other maritime models to make it into a regatta.

There were several lovely model ships on the water during the afternoon. However, the main event was the Putt-Putt boats and the time trials, elimination heats, and grand final races. This started out fairly simply, with boats doing their time trial between two buoys on then pond. While it would have seemed that the "crow flies" course would be best, several boats seemed to have a mind of their own, despite the best efforts of the respective skippers' radio control devices.

There was a fair bit of discussion over the process for determining the elimination series, which involved a return journey back to the starting buoy. There was also some suspected skulduggery when the first boat in the water had to wait for the second to get up steam, leading to suspicion of causing one boat to run short on fuel. Maybe there are even tacticians at this level of boat racing. However, it was all good fun, and in the end, Jeff During ended up racing against himself for the grand final. Unsurprisingly, he won, even after missing the finish buoy, and having to go around. For those of us who have not been privy to much of the experimentation and testing of these boats, it was a bit of

an eye opener to see the faster ones fairly skimming along. So different from the small tin plate children's toys of a bygone era.

I think that for future events it might be nice to choose a non-field day weekend, and for non-Putt Putt maritime members to use it as an event to bring more vessels to the pond. We are the only ME club in SA who has a boating pond. We should make good use of it. Maybe even an inter-club marine day!!

Working Bees

With the decision to go ahead with a major rehabilitation of the track signalling system, there have been many working bees in excess of the standard of latter years.

Member Peter Cockburn and members of his family have been star attractions at these working bees. Peter has gained a reputation for being very much in love with his yellow earth moving machines. His ability to dig long trenches with minimal disruption to hidden pipes has saved an impossibly large job for volunteers. Jack Davey would have been delighted I think, as he was pretty well known as a human earthmoving machine at SASMEE. Having said that, many members have been involved, trimming tree roots, operating the water jet for areas where mechanical digging, barrowing sand where no machine could go, replanting grass, and making sure all that was given drinks was inadvisable

The first, and major part of the programs has now been completed, with conduits radiating out from Fort Knox, and with the wires pulled for powering turnouts, providing track circuiting, and to light up signals.

Site Works

In addition to the signal project, steady work has been carried out on sections of the 7 ¼ inch track.

Member Rohan Garrard has offered to manage 7 ¼ inch track works, and surprise surprise, he got elected. If you can find the time to assist Rohan, that will be of great advantage to him and the Club. I hope that it can become the focus of weekend working bees where members, who are busy working at other times to pay taxes, can come along for a bit of volunteering.

Resulting from various tours of inspection around the grounds, there is a well filled spread sheet of maintenance jobs that need to be addresses over time. Some of these can be managed by the Wednesday oldies group, but given that there is around 100jobs on the

list, it is clear that help in the form of weekend working bees would be a very big help.

In this age, where everyone seems to be at risk of burnout, an occasional afternoon spent doing a bit of manual work, chatting with other members, and having a bite to eat, could provide the diversion needed to maintain sanity.

Website and Photo Competition

Following on from a decision by the previous incumbents to withdraw from managing the SASMEE website, a small IT subcommittee has been hard at work picking up the ropes.

As a result, there have been a few issues to resolve. We are at last pretty well on top of things, and the official SASMEE website has been undergoing a review, with assorted modifications.

One of these is the decision to provide the ability for members' own photographic efforts to be included. To that end, there will be occasional "competitions" where members are invited to present their best efforts of SASMEE and modelling. Details will be presented elsewhere. I am also informed by the Bulletin editor, that this will mean an opportunity for your work to feature on the frontispiece of the Bulletin as well. In addition to this, the members' section is also being populated with various technical pieces. This intended to be one means of making available information that may assist in your enjoyment of the hobby. We encourage any member who wishes to provide content to submit it via the Secretary and or the Bulletin Editor

Covid

Covid has not gone away, and the Treasurer "eagerly" awaits every new declaration or Covid Safe Plan update. She loves reading these tomes!

AALS

While SASMEE has procured satisfactory Public Liability insurance, again outside the AALS group scheme, there are obviously growing concerns for future insurances. Both SASMEE, and the AALS are as one on the need for us to manage our clubs in a safe manner, with due consideration of all risk factors. Unfortunately, this has, and will continue to, generate rules and associated documents. While we all moan over the burgeoning "paper war", it is unfortunately a necessity in the current world. While the aim is, naturally, to be good enough at our

job to have no insurance claims, the truth of the matter is, that we have to be prepared should a claim be made. Our only defence will be the documentation (words photos & etc). When you end up with a piece of paper to fill in, just remember that you are assisting in keeping the club alive. There is a very obvious concern in the insurance industry over “amusement rides”. While we might debate if that title fits us, the fact is that the insurance industry does see us in that light. So much so, that when my own household PLI came due, I was actually questioned over the frequency and type of operation of my rusting backyard track!

Committee

Toiling away in the background, Graham Gaetjens has, after several setbacks, managed to get a COMBIZ account set up. This will finally enable SASMEEE to work in the current financial world where electronic fund transfer is pretty much a given expectation. Initially, we will be practising by moving money back and forth between two of our SASMEE accounts, before launching into bill paying.

Without going into great detail, the CommBiz system has at least the same protection, and in fact more, than the old two signatures on a cheque process. As long as Banks continue to work with cheques, that option is still available if needed.

In the biennial cycle of riding car inspection, the time has come. Please bring your riding cars along to the club for inspection if they don't reside at SASMEE. This is all due in the current month of February. Ian Thomas is the person to speak to.

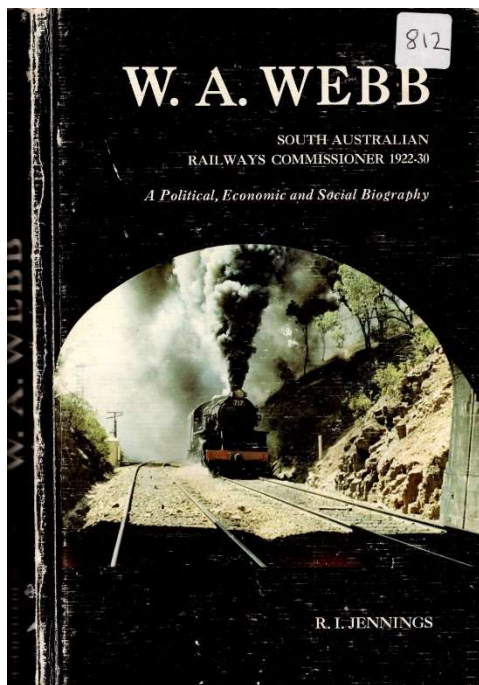
IN THE LIBRARY

Max Shuard

The library is open from 7:00 to 7:45 on General Meeting nights. Also, I generally attend the public run days and Wednesday working bees, so if you are looking for something, please just ask.

Book of the Month

W A Webb – R. I. Jennings



This would be one of the worst books I've ever read. It proports to be a biography of South Australian Railways Commissioner W A Webb. The book is 175 pages in length, before appendices. The first 91 pages deal with the SAR prior to Webb's arrival. It would lead the reader to believe absolutely everything undertaken by the railways, was misguided at best, and downright stupid at worst.

From page 92, Webb makes a cameo appearance. Very few actual details of the initiatives introduced by Webb are provided. Rather, high level and broad description are all the

book contains. It does however, go into great and lurid detail of the obstructions Webb faced, even quoting the press of the day. The final chapter finishes with the author's view on all that was wrong with the railways at the time of writing. The SAR achieved a great deal in the eight years that W A Webb was Commissioner. It is a pity that his achievements are drowned out by the deafening roar of the author's axe being ground.

TECHNICAL MATTERS

Tool Feature

Over the last couple of years, a number of interesting tools have been featured. Tools, sometimes for a single job, or sometimes for a particular function. Most, but not all, are home made. So, if you have anything you have made or acquired to solve a particular problem, could you let me know and it will be featured for all members to see?
Ed.

Reliable boiler feed is about the most important requirement on every steam locomotive. The three common options we use are injectors, donkey pumps and axle-driven (or crosshead-driven) feed pumps, and all of these types have been proven to be completely reliable when implemented correctly. Of course, most drivers have their preferences but there is no justification for being dogmatic about the strengths, or the weaknesses of any type. It's just important to get it right.

I'm going to discuss axle-driven pumps in this article, starting with how big they need to be. I'll also offer a design which is easy to make, which has been well proven, and which has a number of mechanical improvements over traditional designs, such as those from LBSC.

In the early days of locomotives, before the development of injectors, axle (or crosshead) pumps needed large displacement so they could be used to rapidly fill the boiler. This seems to have been carried over to live steam and historical designs by LBSC, Martin Evans and others have featured pumps with enormous displacements. But how big do they really need to be if we are not interested in a fast fill?

There's a quick way to estimate how much displacement (per wheel revolution) is required from a feed pump. Recall that the density of water is 1000 kg/m^3 . Now steam tables reveal that the density of saturated steam at 700 kPa (100 psi) is about 4 kg/m^3 . The ratio is 250 to 1. Immediately, this suggests that the displacement of the feed pump (per wheel revolution) should be about 1/250th (0.4%) of the displacement of the cylinders. In other words, to completely fill the cylinders with saturated steam at boiler pressure, one needs a feed pump to deliver 1/250 of the cylinder volume.

For sure, there are plenty of adjustments one could consider: the effect of superheat, the cutoff, the "missing quantity" due to condensation, leakages, auxiliaries, safety valves blowing etc. Some of these push the above ratio up, and some down, but at least we have a starting point for an engine working continuously at maximum output. How

does this compare with traditional designs? Here is a list of a few common traditional engines.

Engine	Cyl/pump volume ratio	Pump Bore, mm	Pump Stroke, mm
LBSC Juliet 3.5" g 0-4-0	85	9.6	12.7
LBSC Speedy 5" g 0-6-0	87	12.7	22.2
M. Evans Simplex 5" g 0-6-0	96	d/acting 9.5x16	12.7
LBSC Doris 3.5" g 4-6-0 Black Five	105	9.6	16.0
M. Evans Highlander 7.25" g Black Five	142	twin, 16.0	16.0

The pumps are grossly larger than requirements, so there's plenty of reserve for boiler filling. All these engines are well proven, so what's the problem? I admit to being a purist, and if I put my purist's hat on the main downside of having too large a pump is that the pump is unnecessarily absorbing work since it is displacing a higher volume of water than needed at above boiler pressure. Smaller pumps use less power, reduce cyclic loading, are less likely to suffer hydraulic issues (e.g. water hammer, valve chatter, intake cavitation), and are easier to adjust. I have modified all my engines and they build up water levels whatever the duty. These are the ratios now:

Engine	Cyl/pump volume ratio	Pump Bore, mm	Pump Stroke, mm
Juliet 3.5" (AW)	121	8.0	12.7
Simplex (PW)	266	9.6	12.7
Juliet 5" g (AW)	271	9.6	12.7
Highlander 7.25" (AW)	282	16.0	16.0
Speedy (AW)	285	9.6	12.0
BlackFive 5" (AW)	363	9.6	13.0

These figures compare very well with the theoretical ratio of 250 derived above, and also with the findings of another author (Jim Keith <http://home.fuse.net/jasdot/axlePump.html>). All of them perform public passenger-hauling duty without needing additional feed. The last three on the list usually run with the bypass fully closed ("set and forget"), and there is sufficient feed for an occasional blowdown.

Naturally, one manages the fire to avoid excessive blowing off via the safety valves, but this is good driving practice anyway, and as you would expect, the water level rises more rapidly when running a light train.

It is often said that single-acting axle pumps produce cycling loading leading to jerky movement of the engine. It is relevant to compare the energy absorbed by the feed pump, with the kinetic energy (KE) of the moving locomotive. To calculate the energy absorbed in one pump stroke, multiply the displacement (in cubic metres) by the delivery pressure (in Pascals) and the answer is in Joules. For an engine like Juliet with the original LBSC-sized pump, it turns out that the pump extracts about 0.8 Joules per stroke. The kinetic energy of the moving locomotive, also in joules, is the speed (in metres per second) squared multiplied by half the engine mass (in kg). Juliet carries 15 joules of KE at 5 kph, so 6% of the kinetic energy of the locomotive is absorbed by the axle pump per revolution of the driving wheels. That's a speed drop of about 2.5%, which I suggest is barely noticeable in terms of a jerk, but it would cause the speed to fall when drifting. In the case of the Black Five fitted with the small-displacement pump, the energy extracted per revolution amounts to a negligible 0.7% of the locomotive's kinetic energy. I should point out that a crosshead driven pump of the same displacement will produce exactly the same outcome.

So the theory suggests there is no justification for a double acting pump (or twin pumps) for reasons of reducing jerky running. This is especially true for small displacement pumps as I am advocating. The take-home message is that if the axle pump makes any noticeable difference to the running of the engine, it is being wasteful. The chances are that its displacement is larger than necessary, but the problem may be exacerbated by excessive gland friction or valve constriction in the pump.

It often comes up in discussion about the most efficient way to feed a boiler, in other words, what is the least costly device in terms of steam consumption for a given quantity of feedwater. Of course, the injector provides hot water, since the "exhaust" heat from the pumping process

is returned to the boiler, but there is no escaping from the principle of the conservation of energy, and from inevitable losses within the pumping process. Would the steam consumption of an injector be lower than that of a donkey or axle pump, to transfer the same quantity of cold feed water? I have yet to do the calculation or conduct an experiment to answer that question (it's on my list). It seems plausible that the efficiency of a donkey pump would be substantially lower than an axle pump, because the thermal losses relative to the mechanical output would be higher, it is not exploiting expansion of the steam as in the driving cylinders, and the steam is never superheated. One can calculate the theoretical power absorbed by a feed pump, from the joules per stroke (see above) times the stroke frequency (revs per second). For a 3.5" g Juliet with an LBSC sized pump, the ideal power requirement at 5 kph is 5 watts. That can be compared with the drawbar power output which has been measured by dynamometer car at 50 watts average (see www.avocetconsulting.com.au/modeleng) so the original boiler feed was absorbing around 10% of the output power. Again, I can contrast that with my 5" g Black Five (the red one) with a small displacement pump, and the corresponding result is that the pump theoretically absorbs 2.5 watts, the average dynamometer output was 365 W so the boiler feed consumes just 0.7% of output. This shows that it can be negligible (which, by the way, is an inherent property of the Rankine steam cycle). While I have not derived figures for injectors and donkey pumps, I think it is fair to say that the humble axle pump can be extremely efficient. In addition, pumps work equally well with hot feedwater, a very important advantage over injectors for those of us with tank engines in Australia.

It's important for small-displacement pumps to retain high displacement efficiency¹ at all speeds. I suspect that many large displacement pumps suffer from poor displacement efficiency, especially when running at speed, but that the losses go un-noticed because the driver compensates by closing the bypass valve. While I am a great admirer of LBSC, I have become somewhat critical of his axle pump design and

¹ Displacement Efficiency = (volume of water delivered)/(piston displacement) per stroke. 100% implies no leakage, cavitation or air pockets.

I set about to design my own to eliminate several defects in his and other traditional designs.

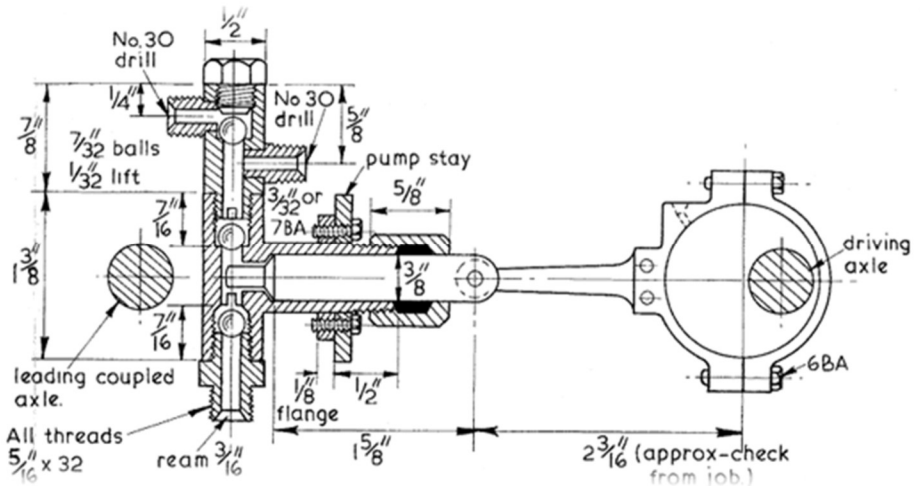


Figure 1 LBSC pump for “Britannia” (Source: The Model Engineer)

So what’s wrong with the old pump design? This is my list of design flaws:

- (1) the displacement is larger than it needs to be, by a factor of almost 3.
- (2) The plunger is poorly guided at the outer end, where the support is most needed to resist the off-axis force from the angularity of the eccentric rod. The wear rate is high due to lack of lubrication and clearances in the gland open up with time.
- (3) The gland nut relies on a degree of tightness to remain firm (which adds friction), and is not mechanically locked (risk of working loose and leaking). It is easy to overtighten the gland nut, adding to friction and wear.
- (4) The packed gland in this application is now obsolete. Compared with an O ring seal it requires skill to set up plus regular adjustment. In practice they are prone to leak and can have high friction.
- (5) There is no provision for lubrication of the ram and gland.

In addition, the following are not flaws but would be on my wish list:

- (1) Preferably, the screw-in fittings use an O ring face seal rather than a thread sealant.
- (2) Preferably, the lower valve would use an O ring seat rather than a ball. My experience indicates that it is less likely to stick when the pump dries out, it is less likely to chatter, and it achieves a perfect seal.

It is common to add an O ring on the plunger, running within the bore, and if correctly implemented this will reduce leakage, but other design flaws remain. There is still no oil lubrication for that seal, the bore requires finishing to a high quality, and the wear is difficult to monitor and repair.

The following design removes all of these drawbacks, and adds my preferences.

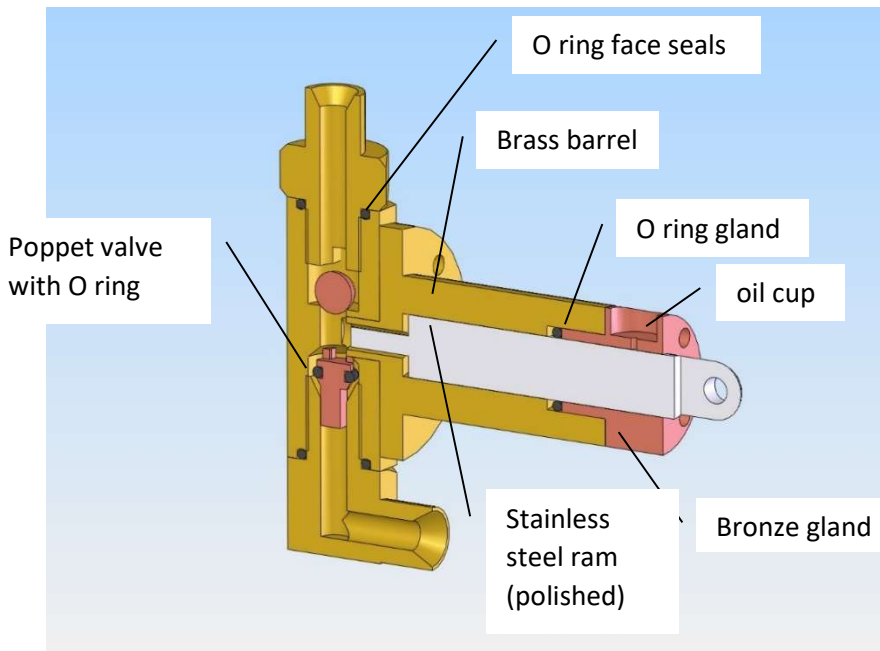


Figure 2 CAD model for an improved feed pump.

The features of this design are:

- (1) The bronze gland provides a long, robust guide for the ram, supporting it just where it is needed most.
- (2) There is provision for oil lubrication, just where it is needed. Wear is virtually eliminated; water may be good, but oil is better.
- (3) The O ring slides on the OD of the ram, which can be polished easily. With oil lubrication, there is virtually no wear, and zero maintenance.
- (4) The O ring seals in both directions. There is zero water leakage outwards, and air cannot be drawn in to reduce the displacement efficiency.
- (5) There is no need for an accurate or finely-finished bore in the barrel. It can have a slight clearance, so there is zero wear. Alignment of the gland with the bore is simple, precise and reliable.

It is worth mentioning a few tips for those who want to design their own. Make sure that the O ring gland dimensions are correct. If you are using imperial O rings, the correct squeeze is built in to the nominal sizes, so a 1/16" cross section ring is correct on a ram 3/8" diameter in a gland of 1/2" diameter (for example). The length of the gland is not critical but it should be at least 1.5 times the O ring cross section (e.g., 3/32" for a 1/16" O ring). O rings are never to be squashed like a gasket.

Between two and four small screws can be used to attach the gland into the barrel. There is not much thrust tending to force the gland out. Four M3 screws for a 5/8" ram is plenty, and two would be adequate for a 3/8" ram.

It is important to minimise the dead volume when the plunger is fully in, to clear air which would otherwise reduce displacement efficiency due to its compressibility. LBSC's spigot helps in this regard, but where there is room one can run the ram bore right into the valve body at full diameter, so there's no place for an air pocket to hang up in.

Limit the lift of the ball valve to a maximum of around 20% of ball diameter. This is to minimise chattering, which can seriously reduce displacement efficiency. If chattering persists, I would suspect a travelling-wave type of waterhammer in the connected plumbing. A

modification to the piping might work. Once I introduced a short length of silicon pipe into an intake line and it fixed the problem by acting as a snubber. However, with a small displacement pump one is far less likely to have a chattering problem in the first place. Another approach is to use an O ring seated poppet valve like the one illustrated.

Naturally, the flow path above the valves, when the valves are lifted to their stops, should be reasonably generous. As a guideline, try to make the minimum cross-sectional area of the slots or gaps equivalent to the area of the bore of the valve seat.

The picture shows components made for a 5" g Simplex, to substitute for the original "Complex" double acting pump. It is almost identical to the pumps I have fitted to Speedy (0-6-0), Black Five (4-6-0) and 5" g Juliet (0-4-0). These engines run with the bypass closed and the metering is precise enough to refill the tender or tanks on the basis of distance travelled – e.g. every 5 km on Black Five.



Figure 3 Components for a replacement Simplex pump

It's worth mentioning a novel pump and plumbing arrangement which works well on Highlander. I don't claim credit for this idea (except for the tickler wire). It's well known that valves can stick shut when the

engine is not run for a long time. One is forced to disconnect pipes and unscrew difficult-to-access valve seats just before a run.

The scheme is to connect the emergency hand pump in series with the axle pump. Should any of the valves stick shut (except for the first one, the hand pump intake) they can be loosened with a few strokes of the hand pump. So what happens if the first valve sticks? As the diagram shows, there's a bent wire "tickler" accessible through the filler hole, and which leads to the bottom ball of the pump. Lifting the upper end of the tickler physically bumps the stuck ball off its seat. Some care needs to be taken when setting up such a scheme, to minimise pressure drop along the long intake line from the tender to the axle pump. One needs to allow sufficient flow area right through, and to avoid sharp corners and restrictions, so that cavitation at the axle pump is minimised. Of course, using a low-displacement axle pump makes this objective much easier – half the flow rate produces only $\frac{1}{4}$ of the pressure drop.

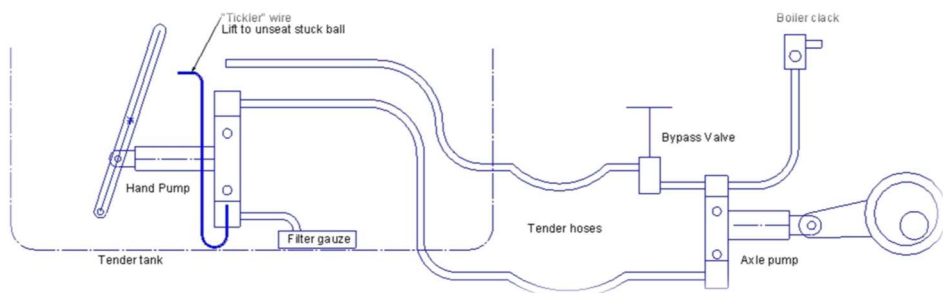


Figure 4 Schematic of pumps in series

The small-displacement axle-driven feedpump is a driver's friend, provided that it is well engineered. In my view it is a winner for reliability, efficiency, longevity, ease of use and simplicity to build.

IN THE WORKSHOP

Centring a non – round part in the four-jaw chuck. Bryan Homann

When faced with the need to precisely locate a part in the independent four jaw, where the part is either not nice and round (i.e. a square), or requires offset holes or machining, there is a simple easily made little device that can help. I suppose it has a name in the big wide world, but as I don't know that, we will call it Fred.



Fred is a lengthy piece of steel rod with a point on one end to fit snugly into a well-appointed centre punched indentation. How you precisely locate said centre punch hole is up to you! At Fred's other end, there is a larger piece of steel that slips over the longish rod, and it has centre drilled hole in the blank end (the only obvious place to put it!!). Hiding inside this piece is a spring of

indeterminate character, but strong enough to hold Fred when fitted up between the tailstock centre, and the work piece in the chuck.

Fred needs the assistance of a dial indicator mounted securely (magnetic base, or tool post)

Once you have the lump in the chuck moderately close to the desired position, put the dial indicator up against Fred close to the chuck.

Provided that the out of position is not so far away that the dial indicator cannot get to Fred the dial reading are used in exactly the same way a job is normally set up in the four-jaw.

The photos show Fred, and a cousin who was, if I recall correctly, brought into the world to centre an existing largish hole in a non-round

component. In this case, a ball bearing is used to fit in the hole in the part, and a hole in the main body of Fred's cousin



Fred would benefit by having a large diameter near the chuck end to reduce the effect of the indicator jumping off. A job to do one day. An alternate would be a flat end on the indicator (some sets do have'em). Locating centre punch dents, and swiftly truing up in the four jaw is something that many YouTube workshop videos will show you. Neither are all that scary and should not deter anyone from using the four-jaw when rigidity and accuracy are paramount

CLUB ACTIVITIES

Interclub Invitation Day

Due to a predicted very hot day, the annual January Invitation Run had to be cancelled. It was revived and ran on Saturday March 12th. Here are a few highlights



David
Heah

Bob Smythe from
Railway Park.



Peter!

Louise
and
Susan



Welcome to SASMEE



Brenton



Jayne
and
Aidan



Allan and Trevor

Photographs courtesy of
John Brougham.

The Great Putt-Putt Race March 2022 John Foster

Where is the experimentation in SASMEE? In 2019 this was the question being asked by the Boaties of SASMEE. They acknowledged that codes of practice constrain the rail members, but the Boaties had more scope for innovation. A challenge was issued to all club members to build a boat up to 300 mm in length powered by any means other than a commercial battery or a conventional steam engine boiler combination. No radio control was the other rule. A race halfway across was to be held on the January 2020 Invitation Run evening. Several boats arrived powered by sail, rubber bands salt-water batteries, and great fun was had. A putt-putt boat was to have competed but self-destructed on the slipway. Experimentation was proved to still be alive at SASMEE but none of the entries suggested a path to further experimentation.

Where to now, the putt-putt idea seemed worth pursuing. How about the same rules on size but all boats to be putt-putt powered for Invitation Run night 2021? As no member was familiar with putt-putt power success criteria would be an operating boat rather than a race win. The boats were entered on the night by Allan Wallace, Jeff During, and John Foster. The test started in the harbour. Would these things be seaworthy? Each boat putt-putt away merrily and was soon operating on the open pond. With its four tubes and open flame Allan's boat was by far the fastest even though it did tend to catch fire anytime it hit an object. Jeff and John with only two tubes each followed behind. All boats were fired with alcohol (metho not the drinking stuff).



Jeff



Allan



John

The results suggested a path to further innovation. How about larger boats with radio-controlled rudders? Rules were drawn up for boats that would fit on a A3 sheet of paper with radio control on the rudder only. Jeff During drew on his Drag

Racing experience to suggest competition starting with a 21 M (70 ft) time trial followed by matched races of pairs of boats over the time trial course extended to a return leg to the start line.

All through 2021 building and testing went on at a great rate. Building a working putt-putt engine is relatively simple but getting reliable operation is an art and then installing it in a competitive boat, is enough to make strong men cry. The week of the January 2022 Invitation Night fast approached, but the sun had shone down all week and grew hotter with each day until the 35^o cut-off temperature for SASMEE operations was forecast. Alas no races. What now? 20th March was agreed as a new competition date. By then cooler weather and pleasant autumn days should eventuate.

March 20th quickly came round, the putt-putt builders arrived at SASMEE. The pond was as flat as a billiard table and the breeze calm. Boats presented were:

Jeff During with three aluminium skiff type hulls, two with 4 tubes and 1 with 6 tubes. Metho fuelled.

John Foster with two catamarans each with 4 tubes and fired with hexamine blocks.

John Harris with an aluminium displacement hull powered by a camp stove burner using metho for fuel.

Max Shuard with a cabin cruiser design, featuring a beautifully made evaporator. Metho fuel

Stopwatches were readied the starting gate sorted and the time trials commenced. Results are tabled below.

Builder/Driver	Time seconds
Jeff During Put 1	62
Jeff During Put 2	79
Jeff During Put 3	87
John Foster Cat 1	83
Mike Foster Cat 2	102
John Harris B Tinny B1	108
John Harris B Tinny B2	105
Max Shuard Voyager	128

For the race boats were paired off by their times. Three heats were required to achieve a winner resulting in Jeff During being crowned Grand Champion.

Competition was fierce with numerous false starts due to the varying times required to get reliable putting resulting in the other boat requiring refuelling. Jeff's Put 1 had previously been his fastest got stage fright and ran slow. John's Cat 1 was on a par with Jeff's winning boat in straight-line speed but was defeated by Jeff's innovative forward rudder design which gave his boat several metres advantage in the turn for the return leg. John Harris's and Max's boats both performed particularly with having displacement hulls. A little more development and racing will be closer next time.

Winning the race while satisfying was only the incentive to power the exercise. Stimulating experimentation and innovation was the motivation for starting the project. This was certainly achieved, countless hours were spent researching putt-putt design and building prototypes, testing, scrapping, and or revising designs. Some of the innovations were:

- Hull design – 3 distinct types emerged
- Evaporator design - each boat had a different design
- Rudder placement, normally forward rudders are unstable but for a short course and a sharp turn, they were decisive.
- Burner design – each boat had a different design.
- Fuel – two boats used solid fuel, the others metho.
- Starting Gate – required to start 2 boats simultaneously
- Launching Aids – 3 different launching aids design appeared to ease placing the boats in the water.

All in all, innovation is alive and well at SASMEE and our name of South Australian Society of Model and EXPERIMENTAL Engineers still stands.



Max's Cabin Cruiser



Jeff's Put 1 v John F's Cat 2



Jeff's v John H's B tinny

Visit from the Ford 8 and 10 Side Valve Club Max Shuard

On the public run day of 3rd April, SASMEE had a visit from the Ford 8 and 10 Side Valve Club (a very specific title!). Nine vehicles attended, late 1930s to early 1950s. All were beautifully restored. The owners were keen to show SASMEE members over the cars and in turn had many rides on trains. It was very interesting to see the work of "modellers", albeit with models with IC engines and 1 to 1 scale. The

details are different, but the principles the same. Kindred Spirits. A enjoyable interlude.



**2 ½”
Locomotive –
Identity?**

This locomotive was found in Graham Driscoll's shed, under much dust and many cobwebs. Graham cannot remember where or when it came into his possession, but he has had it for a long time. It is 2 ½” gauge, finely built. There are also parts for an incomplete tender. That indicates that it was probably locally built and possibly by a past member. If you have any thoughts that could throw some light on the provenance of this locomotive, please let me know.

Buy and Sell

For Sale

Nearly completed 5-inch gauge LMS Mogul (Crab) 2-6-O locomotive.

Boiler, cylinders, underframe, tender all complete - some motion gear to finish. Brass cab laser cut parts on hand. Full size drawing books etc. Contact – Kingsley Martin 0412 836 684.



Wanted

A metal cupboard, non-functioning upright clothes drying cabinet, or upright freezer, to be used for general storage in my shed.

It cannot be wider than 670mm, but ideally should be around 600mm. Depth and height are not issues.

This is to replace a 60year old set of kitchen drawers that have succumbed to the local white ants. I can pick up.

Bryan Homann 0417843945 214bryanh@gmail.com

Safety Valve Run

After a hiatus of a couple of years, the club is looking at running a "Safety Valve Run" on Saturday 9th July. Put it in your diary. Pizza for dinner. More details closer to the date.

One is to One scale

Z Class Update

Bryan Homann

When a modeller puts the last wheel set in his first loco frames, and has a "rolling chassis", there is joy and a great sense of achievement. When the "model" is gauged at 3 1/2 feet, instead of 3 1/2 inches, the joy and achievement is amazing. On April 10th this year, Glenn Smythe achieved that milestone, after 20 years of work. His SAR Z class locomotive sat elegantly just outside his Ironbank workshop, as the second wheel set was winched into place. Invited for this special occasion were many of the people (and partners) who had assisted Glenn in one way, or another. These included model engineers, representatives from the National Rail Museum, Pichi Richi Railway, and the many businesses that assisted in this mammoth project.

Of course, it is more than just a rolling chassis, having a cab (with many fittings), a smokebox, and (still in the shed) the almost completed tender. A lovely piece of work on display was one of the fabricated cylinders. Much of the valve gear is also complete. After the loco was rolled fully out of the workshop, Glenn gave a short speech where he thanked all those who had assisted in some significant way. There was a lot of clapping!

His next major task is to fill the obvious gap between smokebox and cab. He expects that to be a five-year project, which means it could coincide with SASMEE's Centenary in 2027!

The workmanship in this locomotive is outstanding, and once complete, it will be a magnificent representative of a class of locomotive that worked all narrow-gauge divisions of the South Australian Railways, particularly on express passenger service on the Northern Division. The first Z, 187, was in service in 1894, and Z195 and 191 were the last to be condemned on 16th October 1956. They were all built in South Australia, one at Islington Works, and the other 9 by James Martin of Gawler. None survived into preservation.

SASMEE Photo Competition

The club is looking to run a continual photo competition, based on club activities, both at SASMEE Park and elsewhere. The first round will finish on 30th June. To give a taste of what is involved, here are some details.

1. Entries will only be accepted from current members of SASMEE, and must be submitted in digital form
2. Each image must be submitted with its own entry form
3. There is a limit of 2 entries per member in each category
4. To preserve anonymity, image files should not identify the photographer
5. Judges will be nominated by the SASMEE Committee, and must not judge any category in which they have submitted entries.
6. Electronic images must be in .jpg format
 1. Image copyright rests with the entrant(s).
 2. However, a non-exclusive irrevocable royalty-free worldwide licence is granted to SASMEE Inc to reproduce the image(s) in its publications and social media channels
7. The judges decision will be final and no correspondence entered into
8. All entries must be submitted to the Secretary no later than 2400 (ACST) on 30th June 2022
9. All entrants are encouraged to attend the Annual General Meeting of SASMEE on the second Tuesday of August. The winners will be announced on that night.

Full details, including an entry form, are available at:

<https://sasmee.org.au/wp-content/uploads/2022/05/SASMEE-Photo-Competition-2022.pdf>

Up and Running

Since the last Bulletin, Public Run Days were held on the 19th February, 5th and 19th March, 3rd and 16th April and 1st May. The Interclub Invitation Run which was scheduled for 11th January had to be cancelled due to high temperature and this was held on 12th March.

From February the public admittance has been progressively raised from 150 to 250. Here are some selected details.

The Run Day on 5th March had the following contributions:

5" 7 1/4"

- Sooty Rohan Garrard
- De Winton Cameron Dicker
- U33 Lucas Groves

On the 31.2" 5" track were:

- 42215 Malcolm Ambler
- Jack and Junior Jackie Monte
- Pennsylvania John Mere
- Smiley Ian Hand

Some of the boats on the pond were:

- HMS Vendette Michael Offler
- Clyde Puffer Michael Offler
- Tug Mike Turner
- Zuder Zee Mike Turner
- Slugga Jeff During
- Speedalong John Harris
- Cranborne Bob Smith

On the Garden Railway

- G 1 Black 5 Allan Wallace

In the Boiler House were Bernie Dickinson and Michael Moyse.

On the stations were Jake Barber, Enzo Greco, Dorothy Ambler and John Monte.

In the Canteen were Mary and Bryan Homann, Graham Gaetgens and Toni Offler.

On the gate were Trevor Morcom and David Hawkins. Safety Officer was Geoff Hall and Max Shuard was the Covid Marshall

The Run Day on the 3rd April had the following locomotives on the 5" 71/4" track

- U33
- Sooty Rohan Garrard
- Black 5 Allan Wallace

On the 31.2" 5" track were

- | | |
|----------------|---------------------|
| • Apprentice | Ainsley Cuthbertson |
| • Pennsylvania | John Mere |
| • NSU 57 | Kingsley martin |
| • Daisy | Toni Offler |
| • Pugsley | John Bellew |

On the pond were:

- | | |
|-----------------|----------------|
| • Cranbourne | Bob Smith |
| • HMS Grenadier | Alan Saunders |
| • Cabin Cruiser | Malcolm Ambler |
| • PT10011 | Jeff During |
| • Speedalong | John Harris |
| • Air boat | John Foster |
| • Raelene M | Michael Priest |

On the stations were Enzo Greco, Peter Cockburn, Michael Priest and John Foster.

Michael Moyse attended the Steam House

In the Canteen were Mary Homann, Dawn Schaefer and Bryan Homann.

On the gate were Trevor Morcom and David Hawkins.

Geoff Hall was the Safety Officer.

The Run Day on 1st May had the following contributions:

5" 7 1/4"

- U33 Rohan Garrard
- Black 5 Allan Wallace
- 351 Ainsley Cuthbertson
- 627 Paul Dickinson

On the 31.2" 5" track were:

- Heisler Alan Thomas
- Sweet Pea John Lyas
- NSU 57 Kingsley Martin
- Daisy Toni Offler

The pond was alive with:

- Clyde Puffer Michael Offler
- Spurt Jeff During
- Putt-Putt Jeff During
- Georgina Yacht Bob Smith
- Pride of Firth Bob Smith
- Zwarteze Mike Turner
- Speedalong John Harris
- HMS Grenadier Alan Saunders

On the Garden Railway

- Der Alder Max Shuard

In the Boiler House were Bernie Dickinson and Michael Moyse.

On the stations were Enzo Greco, John Mere, John Bellow.

In the Canteen were Mary and Bryan Homann and John Foster.

On the gate were Bryan Homann and David Hawkins.

The Safety Officer was Max Shuard.

The March General Meetings were held at the club – under the veranda. The April and May meetings actually in the club house!

After the April General Meeting, Bill Coles gave a very interesting talk on tool sharpening techniques.

After the May General Meeting, Jeff During enlightened the club members with a presentation on the mysteries and practicalities of putt-putt boats.

Efforts are being made to provide interesting and topical talks after each General Meeting. If you have any ideas, requests (or better still!) offers, please let me know. Ed.

SASMEE PROJECTS

3 ½ - 5" Track.

3 ½" track around from the north side of the station to the mainline is complete. There is still some rail to be laid in the siding.

5 – 7 ¼" Track. This project has been delayed, as priority has been given to the signalling project. Minor rail and sleeper replacement has been undertaken in priority areas.

Signalling Works.

The trenching is complete and significant cable has been laid. Some of the signal masts and footings have been refurbished or rebuilt. The work is ongoing.

Mount SASMEE. From the projects, there is quite a bit of dirt surplus. This is good fill, but it will cost to have it removed and dumped. If anyone has need or knows of someone who does, please let the club know.

7 ¼" Riding Cars.

Work has commenced on upgrading these riding cars, starting with the brake gear. Ultimately, many of the wheels will need to be reprofiled or replaced

SASMEE BUSINESS

Constitution.

Work is continuing on revising the SASMEE Constitution. The plan is to have a draft complete for circulation to members by the end of May. Comments and suggestions will be solicited and discussion, explanations session held after the June General Meeting. If there are outstanding issues, another discussion session can be held after the July General Meeting. It is intended to have the Constitution voted on at the August meeting.



Boiler House Attendants. Bernie is looking for some help in the Boiler House. The Boiler House and its vintage and model machinery are one of the unique features of SASMEE Park. It is powered by a Maxitherm gas powered automatic boiler and is run each public field day.

If you are interested in learning about the boiler and the features of the Boiler house, drop into see Bernie for a chat or contact the Secretary on

SASMEE.Librarian@outlook.com

Food Safety Course

There is a very good food safety training course online at:

<https://dofoodsafely.health.vic.gov.au/index.php/en/>

Anyone involved with the Canteen is encouraged to undertake this course. It covers the basics and gives good advice on food handling for public areas.

Web Site.

A lot of work has gone into updating the SASMEE Website. Particularly the Members' area. As well as the Bulletins, there are areas for the library catalogue, training documents, relevant forms and a smattering of technical papers. The Website is a resource for members, please use it. It is still a work in progress and any suggestions are welcome.

Reminders!!

3 ½" 5" Track

The new track has plastic sleepers and where it is now at ground level, it is not to be driven on with road vehicles.

Working with Children

And for those who still haven't undertaken their "Working with Children" clearances, these are still necessary, so please get on the case

Sign In Requirements

It is a requirement to sign the attendance book whenever you are on site at SASMEE. This is an important requirement of the SASMEE insurance and failing to sign in may mean you are not covered in the event of an incident or accident.

It is also still a requirement to scan the QR code. This has changed for retail outlets, but not elsewhere. It will, no doubt change in the future, but until then we must still scan.

So please remember to sign in whenever you are at the park, even if there for only a short time.

Elected Members 2021/2022

Below are listed the elected members and contact numbers.

President Bryan Homann

Vice President	Ian Thomas
Secretary	Max Shuard
Minutes Secretary	David Hawkins
Treasurer	Mary Homann
Asst Treasurer	Trevor Morcom
Safety Co-ordinator	Geoff Hall
Councillors	Alan Thomas
	Greg Weaver
	John Mere

SASMEE - List of appointments made after the 2020 AGM.

There are a number of non-elected positions required for the running of the club. Below is the list of these positions and the appointees.

Public Officer	Alan Saunders
Canteen Managers	Bryan and Mary Homann
Track	Michael Hattersley, Michael Moyse
Track Signals	Michael Moyse
Coal Monitor	John Mere
Rolling Stock Inspector	Ian Thomas
Boiler Inspectors	Bryan Homann, Simon Huntington, John Montedorisio, Peter Hoye, Allan Wallace
Auditors	Graham Gaetgens, Michael Moyse
Fire	Jake Barber

Buildings	Geoff Hall
Rubbish Collection	David Hawkins
Librarians	Mike Turner, Max Shuard
Bulletin Editor	Max Shuard
Pond	Jeff During
Garden Railway	Alan Thomas
Boiler House Manager	Bernie Dickinson
Driver Trainer/Assessors	John Mere, Brenton Dicker
Competent Person AALS	Allan Wallace

2022 Committee Election Form

Committee Positions

At the AGM there will be a spill and elections for all positions. If you wish to nominate, please have nomination forms in to the Secretary as soon as possible. Nominations should be in before 5th July for an AGM on the 9th August.

Last year the AGM was held at The Maid of Auckland – something different. The club is looking at doing the same this year.

And don't forget, you need to be a financial member to be eligible to vote.

Either email secretary@sasmee.org.au or post to:

Secretary,

South Australian Society of Model and Experimental Engineers,

PO box 208, Goodwood. SA. 5034.

A nomination form is included below.

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Nominations for the **SASMEE** Executive and Committee

2022/2023

Please circle the position nominated for: -

- (1) ---President
- (1) ---Vice President
- (1) ---Secretary
- (1) ---Minute Secretary
- (1) ---Treasurer
- (1) ---Assistant Treasurer
- (1) ---Safety Coordinator
- (3) --- Committee Person

I wish to nominate the following person for the position circled: -

Nominee (print name)

Accepted by nominee (sign).....

Proposed by.....

Seconded by.....

Date.....

Nominations are to be lodged with the Secretary by 5th July 2022

PO Box 208, GOODWOOD SA 5034 OR secretary@sasmee.org.au